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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/791,763

03/04/2004

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EXAMINER

RUGGLES, JOHN S

ART UNIT

PAPER NUMBER

1756

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/22/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/791,763	<b>Applicant(s)</b> DETTMANN ET AL.	
	<b>Examiner</b> John Ruggles	<b>Art Unit</b> 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-8 is/are rejected.
- 7) ☒ Claim(s) 6 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/12/04 &amp; 2/2/05</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Election/Restrictions***

Applicants' partial election **without** traverse of Group I claims 1-8 and 13-15 in the reply filed on 10/12/06 was previously acknowledged in the 11/27/06 Office action, which indicated that this partial election was considered non-responsive due to the failure to elect a single numbered specie and within this numbered specie a single elected lettered specie from those set forth in the earlier 9/12/06 Office action on pages 2-4.

Applicants' subsequent election with traverse of "specie (1)" drawn to a set of masks comprising a first mask including a semitransparent first layer and a second mask including a semitransparent second layer (from the species numbered (1)-(4)) in the current reply having amended claims filed on 12/19/06 is acknowledged. The traversal is on the ground(s) that the currently amended claims 1-3 and 5-8 are generic to all species. This is not found persuasive at least because Applicants have again failed to elect a single lettered specie (from the species lettered (a)-(d)). The current amendment of claim 2 includes an alternative "alternating" phase mask (altPSM) with the previous --chromeless-- phase mask (chromeless PSM), incorporating plural species into the elected claims. MPEP § 803 states, in part, "a serious burden on the examiner may be *prima facie* shown if the examiner shows by appropriate explanation of separate classification, or separate status in the art, or a different field of search as defined in MPEP § 808.02". An altPSM and a chromeless PSM are each recognized in the mask art to be divergent species of masks (as previously pointed out, but yet not addressed by Applicants), which would be expected to require different search queries. Examination of these distinct species together would therefore place serious additional burden on the USPTO Examiner for

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conducting the diverse searches that would be required for each of these distinct species (MPEP § 808.02). Thus, the restriction requirement is still deemed proper and is now made FINAL.

During a telephone conversation with Patrick Finnan on 3/7/07, a provisional election was made with traverse to prosecute the invention of the set of masks in amended claims 1-3 and 5-8 for the altPSM specie (e.g., in claims 2-3, etc.). Affirmation of this election must be made by Applicants in replying to this Office action. All non-elected species of the remaining amended claims are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to non-elected invention(s).

#### ***Information Disclosure Statement***

The information disclosure statement (IDS) filed 6/1/04 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. This information disclosure statement (IDS) has been placed in the application file, but the information referred to therein has not been separately considered, because this IDS is not provided in the proper format (as is normally provided in a completed PTO-1449). However, in lieu of US application number 10/792,693, the corresponding US Patent Application Publication 2004/0197677, published on 10/7/04, has been considered as indicated on the attached PTO-892.

The information disclosure statements (IDS's) submitted on 11/12/04 and 2/2/05 are both in compliance with the provisions of 37 CFR 1.97. Accordingly, these latter IDS's have been considered by the examiner. However, Applicants are notified that the foreign document DE 10006952 on the 2/2/05 IDS has only been considered to the extent of the English translation for the abstract of this foreign document.

### *Drawings*

Figure 1 should be designated by a legend such as --Prior Art--, because (i) only that which is old is illustrated (according to the instant brief description of this drawing in the specification at page 10 line 24 to page 11 line 2). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are also objected to because (ii) the legends and text in Figures 4-5 have not been translated from the original foreign language (German) to English and (iii) the use of primes " ' " on the actual reference numbers (at least in Figures 1-3) appear to be inconsistent with those on the corresponding reference numbers in the specification (e.g., Figure 1 reference numbers "31 to 35" for the resist webs at page 12 line 23 in the specification do not fully correspond to the reference numbers --31, 32-- and --33', 34', 35'-- that are actually shown in this drawing, etc.).

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Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

In addition to Replacement Sheets containing the corrected drawing figure(s), Applicants are further required to (iv) submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

### *Specification*

(1) The title of the invention is not fully descriptive. A new title is required that is clearly indicative of the invention to which the currently amended claims are directed.

The following amended title is suggested: --SET OF AT LEAST TWO MASKS FOR THE PROJECTION OF STRUCTURE PATTERNS AND ~~METHOD FOR PRODUCING THE MASKS~~--, especially since all of the previous method claims have been cancelled.

(2) The abstract of the disclosure is objected to because it is too vague as not being sufficiently descriptive of the set of at least two masks to which the currently amended claims are drawn. The abstract should be re-written to reflect the limitations of claim 1 (while still having no more than 150 words). Correction is required. See MPEP § 608.01(b).

The disclosure is also objected to because of the following informalities: (3) at page 6 line 16, "positional positioning" is repetitive and should be appropriately shortened to --~~positional~~ positioning-- and (4) at page 14 line 8, "introduced *centrically*" (emphasis added) is not fully understood with the respect to the positioning of dummy gaps 191 to 193 relative to corresponding gaps 24 to 26 on the trim mask in Figure 3 (to which this passage refers, although it is believed that Applicants may simply mean that, for instance, dummy gap 192 on the primary mask P is centered with opening 25 on the trim mask T).

Appropriate correction is required.

### *Claim Objections*

Claims 6-7 are objected to because of the following informalities: (1) in claim 6 line 5, "an identical third lateral dimension, and the first and the third lateral dimension" (singular) should be corrected to --[[an]] identical third lateral dimensions, [[and]] but the first and the third

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lateral dimensions-- (plural), in order to contrast the identical third lateral dimensions to the first and third lateral dimensions (which are different from one another). Claim 7 depends from claim 6. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3 and 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1 lines 14-15, the language “wherein the first position on the first mask is **identical to** the second position on the second mask” (emphasis added) suggests that the first and second positions are on the same mask, but this is not consistent with the instant specification and drawings. However, for the purpose of this Office action, this language is interpreted to mean that the first position on the first mask is corresponding to the second position on the second mask, in order to be consistent with instant Figures 2 and 3 (as well as this latter language found in claim 8). Similar interpretations also apply to similar language in claims 6-7. Claims 2-3 and 5-8 depend from claim 1.

In claim 3 line 4, the phrase “the fist” lacks proper antecedent basis and does not seem to belong in the context of this claim. This phrase should be corrected to --the [[fist]] first--, as it is interpreted for the purpose of this Office action.

In claim 6 lines 1-2, “the first, second, and at least third opening” lacks proper antecedent basis and should be corrected to --the first opening, the second opening, and the at least one third



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opening--, in order to better correspond with claim 5 (from which claim 6 depends). Similar corrections should also be made throughout at least claims 6 and 7.

Also in claim 6 line 4, "case" and "each case" are unclear and should be appropriately corrected to --in each case-- and --in each case--, respectively, as they are interpreted for the purpose of this Office action. It is also unclear why the "first, second and third webs" (plural) in line 2 of claim 6 appears as "the first, second and third web" (singular) in line 4 of this claim, which should be corrected by changing the singular "web" in line 4 to the plural form --webs--.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pierrat (US 2004/0053141) in view of Kawamura (US 6,558,853) and Toublan et al. (US 6,807,662).

Pierrat teaches a set of masks including a first phase shift mask (PSM) and a second (trim) mask, as well as methods of using this set of masks in first and second overlapping exposures of the same photoresist on a semiconductor wafer (title, abstract, claims). The PSM can be an alternating PSM (altPSM, [0008], *instant claim 2*). Figures 5 and 6 illustrate a mask set in which the PSM for first exposure has a wider opaque line (505, 605) next to a critical feature (e.g., 606, etc.) and the corresponding trim mask for second exposure has a narrower opaque line (511, 611) at a corresponding position to allow space for mis-alignment. The second

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complementary trim exposure of the space can be sub-resolution [0012] (summary of invention, which reads on a trim mask pattern having a "dummy" structure). The second mask can include additional assist features or openings that are not located over the space created by the first PSM exposure, but still improve printing of the space ([0013], which reads on a further opening on the second trim mask, noting that a trim mask opening is often used to clear a phase conflict artifact from exposure with a PSM, *instant claim 3*). Figure 4 shows a mask set including an altPSM 102 and a corresponding trim mask 404. The altPSM 102 is represented with periodic alternating PS 106 (three or more) and non-PS 107 openings or gaps (two or more) of about the same first lateral dimension or first width separated by periodic opaque (e.g., chrome (Cr), etc. [0008] in reference to very similar Figure 1) lines or webs (four or more) of about the same second lateral dimension or second width (in which there are a total of at least five openings or gaps, there are at least four lines or webs, and the first and second lateral dimensions or widths are illustrated as being different from one another, *instant claims 5-6*) [0033]. In Figure 4, exposure through opening 402 may be "sub-resolution", which means that it will not print on its own, but when the second exposure through trim mask 404 is added to the exposure through the PSM 102, it improves the exposure of tight space 105, so that tight space 105 prints more reliably as is indicated by the arrow in aerial image 408 [0034]. The opening in the second (trim) mask can be sub-resolution (claim 16, page 4 right col., which reads on a trim mask having a dummy structure). Figure 5 shows an altPSM 502 having at least three alternating PS openings (non-PS 503, PS 505, non-PS 507) arranged as gaps separated by opaque chrome (Cr) lines (504, 506) in a periodic line-gap pattern (on the first mask [0036], *instant claim 5*).

Pierrat does not specifically teach that the PSM opening and the corresponding trim mask opening are each formed in a semitransparent layer nor other limitations of the instant claims.

Kawamura teaches an exposure mask having an auxiliary sub-resolution dummy pattern to reduce intensity of transmitted light distribution (abstract, Figures). The dummy pattern can be in an opaque film (e.g., chromium (Cr), etc.) on a (binary) mask or in an attenuating (semitransparent PS) film (e.g., molybdenum silicide (MoSi), etc.) on an attenuating PSM (attPSM, presumably as a dummy pattern in a semitransparent layer) to suppress the lowering of light intensity contrast of a desired pattern on either the binary mask or the attPSM (c2/L14-30, c3/L39-56). A conventional "reticule" (reticle or mask) "A" (having an open ratio of 80%) has a central transcribed periodic pattern film 11 having lines and spaces (L/S or a periodic line-gap pattern) surrounded by an open area 12 to produce lines and spaces (L/S) or periodic lines and gaps each having widths of 150 nm, but mask "B" has a sub-resolution dummy pattern film 13 (in previous open portion 12), to decrease total open area on the mask (to 60%) at a distance of 1 $\mu$ m from the L/S pattern film 11 to form lines and spaces (or lines and gaps) each having a width of 100nm on the wafer in a space of 140nm on the wafer (Figures 2A and 2B, c3/L66-c4/L9). As shown by Figures 3A and 3B, respectively, the exposure latitude (which may be analogous to the exposure process window) at the same depth of focus (DOF) of 0.4 $\mu$ m (400nm) is improved from 7% to 10% by using the mask "B" having a sub-resolution dummy pattern instead of the mask "A" without the sub-resolution dummy pattern (c4/L21-29).

Toublan et al. teach a mask set and a corresponding method of designing the mask set for a double overlapping exposure process of the same photoresist, in which the mask set includes a first mask and a second mask, and in which either the first mask or the second mask is a binary

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(trim) mask, an attPSM, or a combination thereof (abstract, c12/L12-14, c14/L45-47), as contemplated to save cost (c2/L39-41).

It would have been obvious to one of ordinary skill in the art at the time of the invention in the mask set including a first mask and a second mask having a sub-resolution dummy structure or opening, in which either the first or the second mask is a PSM (e.g., an altPSM, an attPSM, etc.) and the other of the first and the second masks is a trim mask having a further opening for overlapping exposures of the same photoresist by the first and the second masks in either order (as taught by Pierrat and as contemplated to save cost by Toublan et al.) to have provided an additional separate sub-resolution dummy pattern positioned on the trim mask to correspond with each similar problem area on the PSM, because this would be expected to clear all applicable phase conflict artifacts from exposure of the photoresist with the PSM (as is often the reason for using a trim mask with a PSM in an overlapping double exposure method of the same photoresist, *instant claim 7*). It would also have been obvious to have included a semitransparent layer with a sub-resolution dummy pattern in addition to the main pattern on each of the first and the second masks, because a binary mask and a PSM (e.g., an altPSM, etc.) that each include an additional sub-resolution dummy pattern (e.g., in a semitransparent layer, etc.) for each main pattern on these masks (*instant claim 8*) would provide one of ordinary skill in the art with a reasonable expectation of success for (a) suppressing the lowering of light intensity contrast during exposure of each desired main pattern on the binary mask and/or the PSM and also for (b) improving the exposure latitude or process window achieved from each of these patterns on the binary mask and/or the PSM (as taught by Kawamura), while saving cost (as contemplated by Toublan et al., *instant claims 1-3 and 5-6*).

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1-3 and 5-8 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting (ODP) as being unpatentable over claims 1-10 of copending Application No. 10/792,693 (Kohle et al., corresponding to US 2004/0197677) in view of Pierrat (US 2004/0053141), Kawamura (US 6,558,853), and Touban et al. (US 6,807,662), as discussed above.

The conflicting application claims of Kohle et al. are not identical to the instant claims, at least because: (1) the Kohle et al. application claims recite a set of masks for the projection of structure patterns into the same photosensitive layer on a semiconductor wafer comprising (A) a first mask having an opaque structure at a first position so that projection of its image on a photosensitive layer on a semiconductor wafer in an exposure system leaves a still unexposed resist region in the photosensitive layer and (B) at least one second mask (coordinated with and

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assigned to the first mask) having at least one semitransparent region at a second position on the second mask that corresponds to the first position on the first mask such that by projection of its image on the photosensitive layer at least part of the previously unexposed resist region is exposed in the photosensitive layer; whereas (2) the instant claims recite a set of at least two masks for the projection of structure patterns into the same photosensitive layer on a semiconductor wafer comprising (C) a first mask including a semitransparent first layer having at least one first opening at a first position that is resolved during exposure of the photosensitive layer and (D) a second mask (coordinated with and assigned to the first mask) including a semitransparent second layer having at least one sub-resolution dummy structure at a second position that corresponds to the first position of the first opening on the first mask. The Kohle et al. application claims also do not specifically recite other instantly claimed limitations that are taught by Pierrat, Kawamura, and Touban et al., as discussed above.

However, it would still have been obvious to one of ordinary skill in the art at the time of the invention in the set of masks (as recited by the application claims of Kohle et al.) including a first mask and a second mask having a sub-resolution dummy structure or opening, in which either the first or the second mask is a PSM (e.g., an altPSM, an attPSM, etc.) and the other of the first and the second masks is a trim mask having a further opening for overlapping exposures of the same photoresist by the first and the second masks in either order (as taught by Pierrat and as contemplated to save cost by Touban et al.) to have provided an additional separate sub-resolution dummy pattern positioned on the trim mask to correspond with each similar problem area on the PSM, because this would be expected to clear all applicable phase conflict artifacts from exposure of the photoresist with the PSM (as is often the reason for using a trim mask with

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a PSM in an overlapping double exposure method of the same photoresist, *instant claim 7*). It would also have been obvious to have included a semitransparent layer with a sub-resolution dummy pattern in addition to the main pattern on each of the first and the second masks, because a binary mask and a PSM (e.g., an altPSM, etc.) that each include an additional sub-resolution dummy pattern (e.g., in a semitransparent layer, etc.) for each main pattern on these masks (*instant claim 8*) would provide one of ordinary skill in the art with a reasonable expectation of success for (a) suppressing the lowering of light intensity contrast during exposure of each desired main pattern on the binary mask and/or the PSM and also for (b) improving the exposure latitude or process window achieved from each of these patterns on the binary mask and/or the PSM (as taught by Kawamura), while saving cost (as contemplated by Toublan et al., *instant claims 1-3 and 5-6*).

This is a provisional obviousness-type double patenting (ODP) rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

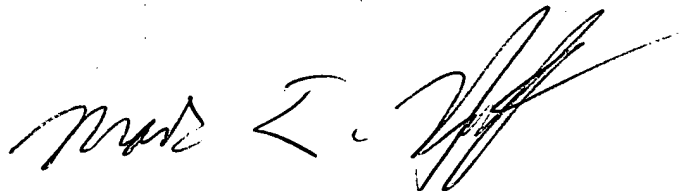
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Ruggles whose telephone number is 571-272-1390. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jsr



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